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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/058,815	01/28/2002	Takashi Shirakawa	9281-4269	2461

757 7590 04/17/2003

BRINKS HOFER GILSON & LIONE
P.O. BOX 10395
CHICAGO, IL 60611

EXAMINER

FEGGINS, KRISTAL J

ART UNIT	PAPER NUMBER
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2861

DATE MAILED: 04/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/058,815

Applicant(s)

SHIRAKAWA ET AL.

Examiner

K. Feggins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-13 is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4,5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Nikaido et al. (EP 0 459 481 A2, IDS).

Nikaido et al. disclose the following claimed limitations:

* regarding claims 1, 4, 8; a thermal head (Abstract)

* a thermal insulation layer/hear resistant resin layer/ on a radiative/dissipates/ substrate/ceramic or glassy epoxy substrate/ (Abstract, col 5, lines 1-5)

* a plurality of heating resistor elements/conductive material formed of predetermine portion of the heating resistor layer/ on a top face of the thermal insulation layer (col 5, lines 25-40, fig 2);

* a power supplier that includes an individual electrode/15/ and a common electrode/18/ connected to the heating resistor elements/14/ to supply power to a heating resistor (pg 4, liens 13-27);

* a protection layer/17/ that covers surfaces of at least the heating resistor/14/ elements and the power supplier/15 & 18/ (pg 4, lines 25-27, fig 2)

*wherein the thermal insulation layer/resistant resin layer/ insulating protective layer, 9/ includes a lamination of an inorganic thermal insulation layer/protective layer/ having a ceramic containing Si, transition metal (pg 4, lines 13-20)

* one of oxygen and nitrogen on an organic thermal insulation layer/heat resistant resin layer and protection layer/ having polyimide resin (pg. 2, lines 56-58, pg 3, lines 54-56, pg 4, lines 3-19, fig 2) for the purpose of preventing a crack.

* regarding claim 2; wherein a film thickness of the organic thermal insulation layer/heat resistant polyimide resin/ is in a range from 10 to 30 μ m/20 μ m/(pg 4, lines 13-23, pg 8, Table 1)

* regarding claim 3; wherein a film thickness of the inorganic thermal insulation layer/heat resistant polyimide resin layer/ is in a range from 5 to 20 μ m/20 μ m/ (pg 4, lines 13-23, pg 8, Table 1) for the purpose of controlling the heat generating resistive layer.

* further regarding claim 4; wherein an inorganic protection layer/resin heat protection layer, 13/ that includes an oxide of one of: one of Si and Al, nitride, and carbide is additionally formed on a top face of the inorganic thermal insulation layer/resin layer serves as a heat insulating layer or the heat resistant resin layer, 12/ and wherein the heating elements/14/ are formed on a top face of the inorganic

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protection layer (pg 4, lines13-19, fig 2) for the purpose of controlling the resistance of a heat generating resistive layer.

* regarding claim 5; a glaze/glassy epoxy/ is additionally formed on a bottom face of the organic thermal insulation/heat resistant resin/ layer (pg 4, lines13-16, fig 2).

* regarding claim 6; wherein a film thickness of the organic thermal insulation layer/heat resistant polyimide resin layer/ is in a range from 10 to 30 μ m/20 μ m/ (pg 4, lines 13-19, pg 8, Table 1)

* regarding claim 7 ; wherein a film thickness of the inorganic high insulation thermal protection layer/protection layer/ is in a range from 5 to 20 μ m/6 μ m/ (pg 4, lines 13-19, pg 8, Table 1).

* regarding claim 9; wherein a film thickness of the inorganic thermal insulation layer/heat resistant resin layer/ is in a range from 5 to 20 μ m/20 μ m/, and a film thickness of the protection layer is in a range from 1 to 3 μ m/3 μ m/(pg 4, lines 13-19, pg 8,Table 1).

Allowable Subject Matter

3. Claims 10-13 are allowed.

The following is an examiner's statement of reasons for allowance: The primary reason for the allowance of claims 10-11 is the inclusion of the limitations of a thermal

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head that includes a thermal diffusion layer is formed on a top face of the heating resistor elements with interposition of an electric insulation film. It is this limitation found in the claims, as it is claimed in the combination of, which has not been found, taught or suggested by the prior art of record that makes these claims allowable over the prior art.

The primary reason for the allowance of claims 12-13 is the inclusion of the limitations of a thermal head that includes a thermal diffusion layer is formed on bottom faces of the heating resistor elements with interposition of an electric insulation film. It is this limitation found in the claims, as it is claimed in the combination of, which has not been found, taught or suggested by the prior art of record that makes these claims allowable over the prior art.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Aria et al. (US 4,096,510) disclose a semiconduction silicon device that includes a semiconductor silicon substrate having a diffusion layer. Mitani (US 5,444,475) disclose a thin film thermal recording head with two layers of thermal insulation layer are formed from a heat resistant resin and an inorganic insulator.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Communication With The USPTO

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Feggins whose telephone number is 703-306-4548. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, B. Fuller can be reached on 703-308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-872-9318 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

KF

April 7, 2003.